



Castilleja linariifolia

Castilleja

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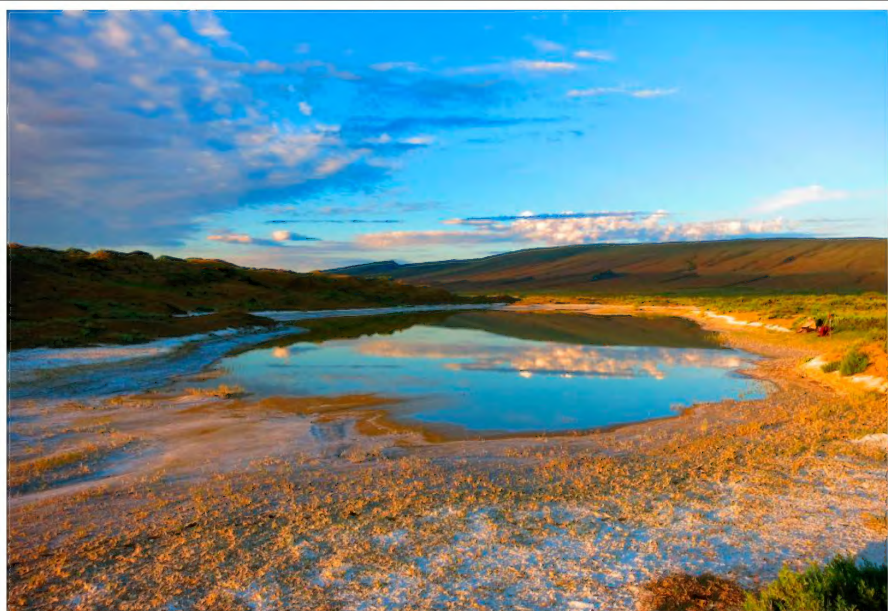
New Web Page Offers One-stop Shop for Information on Wyoming's Wetlands

By Paige Copenhaver-Parry, Lead Ecologist, Wyoming Natural Diversity Database, University of Wyoming

Wetlands within Wyoming represent a critical ecological resource, acting as refugial habitats that support high productivity and biological diversity amidst a vast semi-arid landscape. Yet, their relative rarity has, at times, made sufficient information with which to prioritize wetland restoration and protection difficult to come by.

To improve access to information and data describing Wyoming's wetlands, the Wyoming Natural Diversity Database (WYNDD) has recently launched a new wetlands web page that synthesizes information on Wyoming's wetlands in a single location. The new Wyoming Wetlands web page provides direct links to WYNDD web pages and tools including: reports and publications on wetlands in Wyoming; detailed descriptions of each of Wyoming's wetland habitat types; the newly-expanded Data Explorer web application which now features surveys of priority wetlands and wetland spatial layers; a curated list of wetland assessment and monitoring methods; and the Species List feature of the Data Explorer, which has been expanded to display wetland indicator status for all Wyoming vascular plants. The page also features links to external tools including the Wyoming Game and Fish Department's Wyoming Wetlands web site, a story map describing Wyoming's priority wetland complexes, and WyoWet – a decision support tool developed to guide wetland restoration, conservation, and protection efforts in the Popo Agie watershed.

The new Wyoming Wetlands web page builds on extensive wetland research conducted by WYNDD



Playa wetland of the Great Divide Basin by Lindsey Washkoviak.

scientists and leverages WYNDD's web applications, which provide ready access to data and information on Wyoming's species and habitats. The Wyoming Wetlands page can be accessed from the WYNDD home page (<https://wyndd.org/>) or at: <https://www.uwyo.edu/wyndd/find-data-info/about-our-data-information/our-core-data-information-products/wetlands.html>

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WYNPS News

Clark Convergence: Thank you to all who made it to an outstanding WYNPS annual meeting based in Clark, WY last June. *We held a Silent Auction for the first time, and as a result, \$590 was contributed to the Scholarship Fund!*



New members: Please welcome the following new members to WYNPS:

Matt Bambach,
Jackson; JJ Chen, Laramie; Phoebe Coburn, Wilson;
Meta Dittmer, Alpine; Dorothy Fornstrom, Pinedale;
Abigail Freeman, Jackson; Kathy Devereaux, Upton;
Christine Garceau, Powell; Ross Gorman, Cody;
Gretchen Hurley, Cody; Bobby Hughes, Austin, TX;
Lisa Johnson, Alta; Kelly Keenan, Casper; Laurie Latta,
Pinedale; Rebecca Oblander, Cheyenne; Jason Olsen,
Gillette; Oxford Legal, Ambler, PA; Tyrell Perry,
Rawlins; Erin Radel, Pinedale; RAW Fitness, Albany,
NY; Janet Schultz, Green River; Kelsey Smith,
Pinedale; Noelle Smith, Lander; Dave Tank, Laramie;
Molly Teas, Boulder, CO; Lydia Thompson, Laporte,
CO; Dana Ward, Rock Springs; Mary Weber, Weston,
MA.

Treasurer's Report: Balance as of 26 Sept:
Scholarship = \$2,002; General = \$11, 036; Total =
\$13,038.

WYNPS Board – 2023

President: Vacant
Vice-President: Joyce Evans (wyoslp@yahoo.com)
Sec.-Treasurer: Dorothy Tuthill,
Laramie (dtuthill@uwyo.edu)
Board-at-large: Heidi Anderson, Gardiner, MT
(heidi_anderson@nps.gov) (2023-'24)
Greg Pappas, Laramie (gregory.pappas@usda.gov)
(2022-'23)

Other Contacts:

Editor: Bonnie Heidel (bheidel@uwyo.edu)
Webmaster: Vacant
Sublette Chapter: Jill Randall, President
(possum1b@yahoo.com)
Teton Plants: Amy Taylor, Treasurer;
(tetonplants@gmail.com). Check the chapter
homepage (<https://tetonplants.org/>) for hikes and
other events.
General questions: wynps@wynps.org

WYNPS Need YOU!: This newsletter has a call every fall for nominees for next year's Board. Vacancies include: one of the two Board members-at-large (two year term) positions, and President (one year term). If you or someone you know are willing to serve, please send name(s) and contact information (phone, email) to wynps@wynps.org.

We also need a new Webmaster and a new Newsletter Editor. A Webmaster is responsible for maintaining our website and updating website content, requiring familiarity with WordPress and coordination with Editor. A Newsletter Editor is responsible for producing four newsletter issues a year, requiring writing, networking, layout skills, and coordination with Board and Webmaster; also involved in the printing and mailing process.

Message from the Editor: The Ones that Got Away

Every issue starts out with an array of potential topics for a wonderfully broad membership that emerge from work, pastimes and word-of-mouth. They may come from contributing authors. There is also a plethora of Wyoming headlines and announcements that have native plant underpinnings, but which have yet to be cast in this light. So... here are some topics that did NOT get developed in this issue:

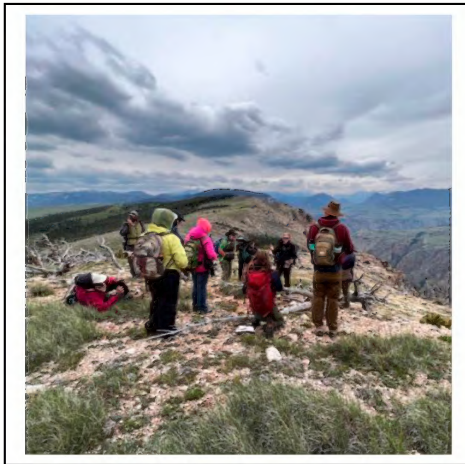
- New WYNPS project
- New medicinal garden
- De-watering of Wyoming by new wetland definition
- Milestones and anniversaries, met and missed
- On-the-ground insights in this year's wet year
- Revelations from dissertations, publications, reports and other new information resources
- Reprinting of general interest feature articles

~Bonnie Heidel

Next issue: Please send articles and announcements for the next newsletter by 15 November to:

Wyoming Native Plant Society
P.O. Box 2449
Laramie, WY 82073

Contributors to this Issue: Paige Copenhaver-Parry, Christine Garceau, Bonnie Heidel, Meredith Taylor and Dorothy Tuthill.



Glimpses of the 2023 WYNPS Annual Meeting

(Upper left) Kassy Skeen introduces visitors to the Swamp Lake Special Botanical Area, largest peatland in Wyoming, (middle) View from the top of Heart Mountain, largest slip fault feature of its kind in the world, (upper right) Friday workshops were held in the Clark Community Center; where Dorothy Tuthill engaged members in a session about journaling. (right) It all happened here – Henry Heasler and Cheryl Jaworowski bring 54 million years of geological history at the mouth of the Clarks Fork Canyon to attendees.

All photos by Dr. Christine Garceau, except for the Kassy Skeen photo by B. Heidel.



Native Plant Garden Dedication at Thermopolis Courthouse

Native plants put on a show last month at the 5 Sept 2023 dedication of the new Native Plant Garden at the Thermopolis Courthouse. The ceremony culminated work by the Red Dirt Master Gardeners in creating a native planting, with 2022 support of a Wyoming Native Plant Society small grant. Our funding was also used to fund-raise for the landscaping work to set off the gardens to best effect.



Above: Thermopolis Courthouse Gardens, right Kim Bartlett speaks on behalf of Red Dirt Master Gardeners at Dedication. Photos by Dorothy Tuthill.

Botanist's Bookshelf¹

Flora of North America Vol. 11, Fabaceae, parts 1 and 2; and **FNA Vol. 14, Magnoliophyta: Gentianaceae to Hydroleaceae** are now printed and available through Oxford University Press (www.global.oup.com/academic/), each for \$95 + shipping.

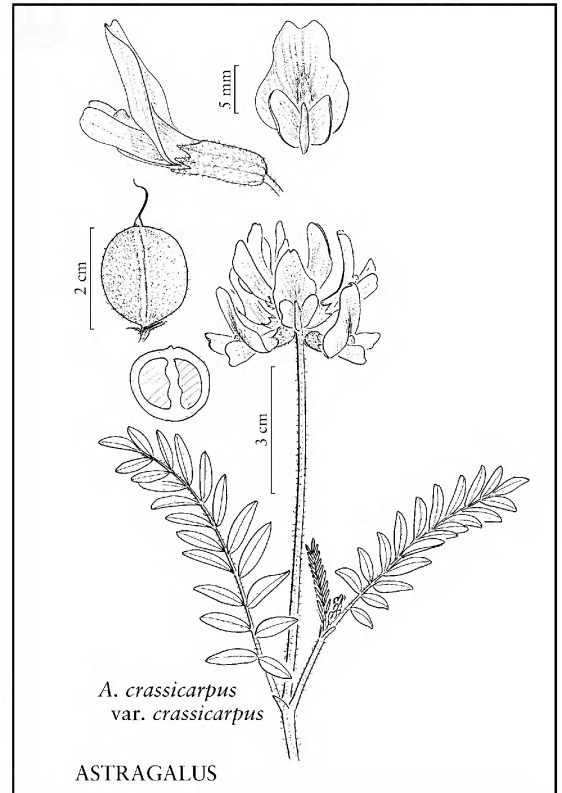
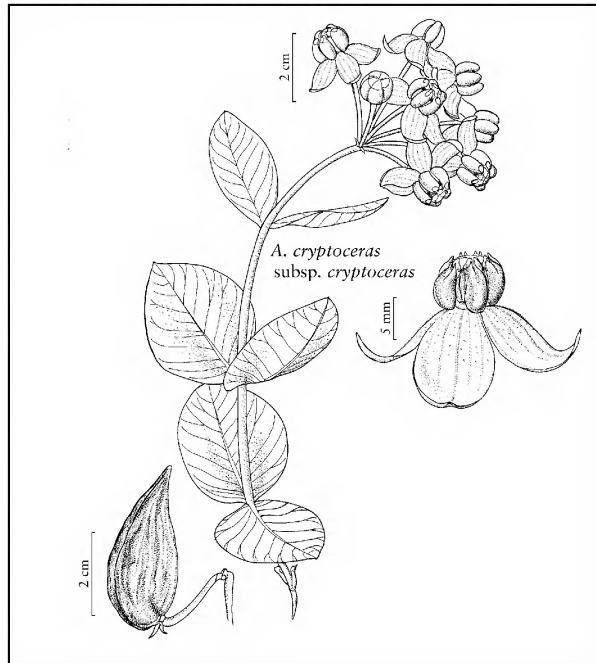
Flora of North America (FNA) Vol. 11 contains ALL of the legumes in North America north of Mexico, in treatments prepared by 70 authors from around the world covering 1,345 species and 153 genera. All genera, native and naturalized, are treated in this volume, including *Astragalus*, **the largest genus in the world**, with 350+ species in the Flora. Volume 11 is dedicated to the late Jim Zarucchi, who was the editorial director of the Flora of North America project at the Missouri Botanical Garden from 1996–2019.

FNA Vol. 14 covers several families; the largest family is Apocynaceae (now including milkweeds). The other large families in the volume are Convolvulaceae, Gentianaceae, and Solanaceae comprising 624 species in 83 genera. Descriptions and keys for all native and naturalized families, genera, species, and infraspecies are provided in FNA volumes,

along with distribution maps for species and infraspecies, and illustrations for every genus (one in six species are illustrated).

Volumes 11 and 14 are the 23rd and 24th volumes, respectively, to be published in the 30-volume flora series...the first volume was published 30 years ago!

Full contents of these new volumes will soon be posted online by the Flora of North America Association at: http://floranorthamerica.org/Main_Page.



New Neighboring State Floras

We're pleased to announce two recent state flora publications of neighboring states, coming out in their second editions:

Ackerfield, J. 2022, 2nd ed. *Flora of Colorado*. Brit Press, Botanical Research Institute of Texas. Fort Worth, Texas.

Lesica, Peter. 2022, 2nd ed. *Manual of Montana Vascular Plants*. Brit Press, Botanical Research Institute of Texas. Fort Worth, Texas. With contributions of Matt Lavin and Peter F. Stickney.

FNA volumes include beautiful illustrations, including these two from the newly-published volumes.

Upper left: *Aclepias cryptoceras* (Pallid milkweed); Courtesy Flora of North America Association, Volume 14, Barbara Alongi illustrator.

Upper right: *Astragalus crassicaarpus* var. *crassicaarpus*, (Ground plum); Courtesy Flora of North America Association, Volume 11.2, John Myers illustrator.

¹ This column features newly-published books and book reviews – submissions are welcome. The FNA volumes stand as landmarks in their own right, and Wyoming reviews were not available to review the two latest volumes.

Ute ladies'-tresses (*Spiranthes diluvialis*) in the Spotlight

By Bonnie Heidel,
Lead Botanist, Wyoming Natural Diversity Database

In the middle of August this year, long-awaited Ute ladies'-tresses (*Spiranthes diluvialis*) findings were released by the U.S. Fish and Wildlife Service (Service), ...but not before Wyoming botanists heralded discovery of a new population on F.E. Warren Air Force Base (WAFB) near Cheyenne, WY.

The new population was discovered by Dorothy Tuthill on 8 August in a small wetland on Diamond Creek. Her discovery was made in the course of censusing Colorado butterfly plant along Diamond Creek, part of a long-term monitoring study on WAFB (Heidel et al. 2023).

Ute ladies'-tresses is currently protected under the Endangered Species Act as Threatened. On 15 August 2023, the Service released Ute ladies'-tresses documents that have been years in the making, including a 5-year review (<https://ecos.fws.gov/ServCat/DownloadFile/235442>)

and a Species Status Assessment: https://ecosphere-documents-productionpublic.s3.amazonaws.com/sams/public_docs/species_nonpublish/5853.pdf

They were presented them as supporting delisting of *S. diluvialis*, determining that it demonstrates sufficient resiliency, redundancy, and representation to withstand catastrophes and stochasticity, both currently and into the future, from drought, invasive species, and development. The Service also determined that there are no significant portions of the species range that meet the definition of threatened or endangered (with its range demarcated by 19 watersheds, seven of which are in Wyoming).

In Wyoming, *S. diluvialis* became slightly more "redundant" with discovery of the new population on WAFB. One other Wyoming population, also on federal land as managed by Bureau of Land Management (BLM), has been emblematic of species' resilience, with flowering plant numbers tallied for the last 17 years by the BLM that show oscillating numbers. There are a total of 10 extant populations in Wyoming; mostly on private land. Delisting is a process that has happened for other Wyoming plant species (Colorado butterfly plant; *Oenothera coloradensis*) and that requires determination that threats have been eliminated or controlled. Any such determination is to appear as a proposed rule in the Federal Register: <https://www.fws.gov/sites/default/files/documents/ESA-Section4-Delisting.pdf>.

... *Spiranthes diluvialis* has appeared in many issues of *Castilleja* over the years: starting in 1994 [13(2)] when it was heralded as Wyoming's first Threatened species, in 1998 [17(1)], in 2000 [19(4)], in 2001 [21(2)], in 2002 [22(3)], in 2007 [27(4)], in 2013 [32(4)] and most recently in 2017 [36(3)] when the start of the Species Status Assessment process was announced.

Reference

Heidel, B., D. Tuthill and A. Stears. 2023. 35-year population trends of Colorado butterfly plant (*Oenothera coloradensis*; Onagraceae), a short-lived riparian species on F. E. Warren Air Force Base, Laramie County, Wyoming. Prepared for U.S. Fish and Wildlife Service and F. E. Warren Air Force Base by the Wyoming Natural Diversity Database (University of Wyoming), Laramie, WY.



Top photo: Dorothy Tuthill with *Spiranthes diluvialis* in WAFB; Bottom photo: *S. diluvialis* as seen on 8 August 2023. Photos by B. Heidel.

Two Regional Sensitive Species Lists to be Replaced by Nine Species of Conservation Concern Lists

Agency news is welcome in *Castilleja*! Here is a combination of new and old news for the U.S. Forest Service botany and ecology programs in Wyoming. In 2012, the U.S. Forest Service planning rule changed in how plant and animal diversity is maintained on national forests and grasslands (USDA Forest Service 2012). It requires that each National Forest plan address both communities of plants and animals and persistence of individual native plant and animal species.

The new community mandate has ambitiously expanded objectives to address ecosystem integrity, including structure, function, composition and connectivity; and ecosystem diversity, to maintain and restore the diversity of ecosystems and habitat types throughout the plan area...but that is topic for a future article!

A new species mandate was first proposed in a draft U.S. Forest Service planning rule, replacing the Sensitive Species list developed for each region of the U.S. Forest Service with Species of Conservation Concern developed for each national forest and grassland by the National Forests. Instead, the final rule places this mandate and authority for national forest lists with the Regional Offices.

What is a Species of Conservation Concern? "It is a "...species, other than federally listed threatened or endangered species or candidate species, which is known to occur in the plan area, and for which the best available scientific information indicates substantial concern about the species' capability to persist over the long term in the plan area" (USDA Forest Service 2012). Note: A similar "species of concern" term has been used in many states, including Wyoming, as a non-regulatory term attached to state lists prepared by natural heritage programs, including the Wyoming Natural Diversity Database.

Sensitive Species lists remain the official lists of the Rocky Mountain Region (Region 2 - <https://www.fs.usda.gov/detail/r2/landmanagemen>

[t/?cid=stelprdb5390116](https://www.fs.usda.gov/detail/r2/landmanagemen/t/?cid=stelprdb5390116)) and of the Intermountain Region (Region 4 - https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5370041.pdf) pending development of Species of Conservation Concern lists for each National Forest. Those forests with updated management plan since 2012 cited the 2012 Planning Rule and the National Forest Handbook, alluding to future Species of Conservation Concern recognition. The region and botany contacts for all national forests in Wyoming are presented in Table 1. BH

Table 1. National Forests of Wyoming, and
Botany/Ecology Program contacts

National Forest/ Grassland (NF/NG)	Region	Botany/Ecology Program Contact ²
Region 2 Office	Reg 2	Tyler Johnson
Region 4 Office	Reg 4	Tova Spector
Ashley NF (Flaming Gorge NRA)	Reg 4	Allen Huber
Bighorn NF	Reg 2	Bethany Davidson
Black Hills NF	Reg 2	Vacant
Bearlodge District of above	Reg 2	Nick Drozda
Northern Hills District of above	Reg 2	Scott Weins
Bridger-Teton NF	Reg 4	Karen Clause
Caribou-Targhee	Reg 4	Rose Lehman
Medicine Bow NF	Reg 2	Greg Pappas
Shoshone NF	Reg 2	Kassandra Skeen
Thunder Basin NG ³	Reg 2	See MedBow NF
Uinta-Wasatch- Cache NF	Reg 4	Vacant
North Zone of above	Reg 4	Sierra Sampson

Reference

USDA Forest Service. 2012. National Forest System Land Management Planning. Federal Register Vol. 77 (68): 21162-21276.

² Job titles and duties differ between positions, but the people named are points of contact for sensitive species, and for botany and/or ecology in general

³ The Thunder Basin National Grasslands will have a SOCC list separate from that of the Medicine Bow National Forest.

Ethnobotany – **Part 7. Rocky Mountain juniper**
(*Juniperus scopulorum*)

By Meredith Taylor, Certified Wyoming Naturalist



Rocky Mountain juniper has berry-like “seed cones.”
Photo by Ben Legler

Rocky Mountain juniper (*Juniperus scopulorum*) is a small evergreen conifer that measures 5–15 m (16–49 ft) tall, with a trunk up to 1 m (3 ft 3 in) diameter. Slender shoots are 0.7–1.2 mm (1/32–1/16 in) in diameter. The leaves are opposite pairs or in whorls of three. The adult leaves are scale-like, 1–3 mm long (to 5 mm on lead shoots) and 1–1.5 mm (1/32–1/16 in) wide. The young sharp leaves on seedlings are 5–10 mm long (Kershaw 2000). The seed cones are berry-like 5–9 mm (3/16–11/32 in) in diameter, dark blue with a pale blue-white waxy bloom and usually contain two seeds that are mature in about 18 months. The pollen cones are 2–4 mm (3/32–5/32 in) long, and shed their pollen in early spring. Juniper is dioecious, producing cones of only one sex per tree.

This species has been used medicinally as a traditional anti-inflammatory for urinary problems, muscle, joint pain, headache or fever. The leaves and bark may be used as a tea to treat coughs and fevers. The berry/cones were also sometimes boiled into a drink used as a laxative and to treat colds. Native American cultures use the smoke of burning juniper

as a smudge to rid them of evil spirits in a healing ceremony (Moore 1979).

Rocky Mountain juniper is also Wyoming’s most widespread juniper, growing in every county of the state (Dorn 2001). The three other species share some of its usage and they include *Utah Juniper* (*Juniperus osteosperma*), creeping juniper (*Juniperus horizontalis*) and common juniper (*Juniperus communis*). Juniper habitat is important for many species including, but not limited to waxwings and deer.

Fruits of Rocky Mountain juniper contain aromatic oil called Monoterpenes that provide anti-inflammatory, anticancer, antioxidant, and antibacterial properties. This edible berry’s distinctive flavor has been used in gin, tea, and meat seasoning. This author makes a popular Juniper Pepper Rub with the ground berries that is a flavorful dry rub on game meat. The light powder on the berries acts as a natural yeast that may be used as a leavening agent in bread or fermented drinks like wine.

One last note: Junipers are particularly long-lived so you may think twice about collecting fruits from a tree with a big trunk.

This article is for educational purposes and does not condone collecting of plants that readers can’t identify with certainty. The ethics of wild plant collecting is to tread softly through the plant’s habitat and only pick occasionally to protect plant sustainability, as described at this agency link: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3822046.pdf

References

- Dorn, R.D. 2001. Vascular Plants of Wyoming, 3rd ed. Mountain Press Publishing, Cheyenne, WY.
Kershaw, L. 2000. Edible and Medicinal Plants of the Rockies. Lone Pine Press.
Moore, M. 1979. Medicinal plants of the Mountain West, Museum of New Mexico.

Wyoming Native Plant Poster

The striking new Wyoming Native Plant Poster is still available! It can be downloaded from the Society homepage (www.wynps.org) and printed on standard letter-size paper. A wall-size copy is available to members while supply lasts (1 per member).

Copies will be at Chapter events (Teton Plants, Sublette Chapter) and can be ordered for cost of postage at: tetonplants@gmail.com. This poster is by artist Natalie Zahn, commissioned by Kimberley Morrow.



WYOMING NATIVE PLANT SOCIETY MEMBERSHIP FORM

Date _____

Name _____

Address _____

Email _____

Please check all appropriate boxes:

- ☐ New member
- ☐ Renewing member
- ☐ Check here if this an address change
- ☐ Annual membership with email notification of newsletters: \$10
- ☐ Annual membership with mailed newsletters: \$12
- ☐ Annual membership with scholarship support and email notification of newsletters: \$20
- ☐ Annual membership with scholarship support and mailed newsletters: \$22
- ☐ Life membership with email notification of newsletters: \$300
- ☐ Life membership with mailed newsletters: \$300

In addition to the statewide organization, we have two chapters.

Membership in chapters is optional; chapter members must also be members of the statewide organization.

- ☐ Teton Plants Chapter annual membership: \$5
- ☐ Sublette Chapter annual membership: \$5
- ☐ Additional donation of \$ _____

Total enclosed: _____

Please write checks to **Wyoming Native Plant Society**

Wyoming Native Plant Society
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Laramie, WY 82073